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NORTH CENTRAL FOREST EXPERIMENT STATION, FOREST SERVICE—U.S. DEPARTMENT OF AGRICULTURE

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A COLLAR FOR MARKING BIG GAME ANIMALS

ABSTRACT. — A simple, inexpensive collar made of Armor-tite (a vinyl-coated nylon fabric) was designed for marking white-tailed deer *(Odocoileus virginianus)* **and moose** *(Alces alces)*. **Field tests showed that the material is easily seen and extremely durable. It may be suitable for use on other large mammals. The collar can be quickly fitted to individual animals under field conditions.**
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Collars of various kinds have been used to mark big game animals so that individuals could be subsequently identified in the field (Progulske 1957; Fashingbauer 1962; Hamilton 1962; Hawkins *et al.* 1967). This paper reports the design and use of a vinyl-coated nylon collar as an aid to study the movements and habitat use of white-tailed deer on the Fort Huachuca Military Reservation in southeastern Arizona and of moose on the Agassiz National Wildlife Refuge in Minnesota.

MATERIALS AND METHODS

The collars were made from Armor-tite,[1] a vinyl-coated nylon fabric available from Cooley, Inc., Pawtucket, Rhode Island. A 5-inch-wide strip of this fabric was used to make collars that could be easily and quickly fitted to either deer or moose in the field (figs. 1 and 2). The strip of fabric was first folded end to end across the width and then the two ends were doubled back about an inch to form four plies of fabric for riveting. A leather punch was used to make holes in the four plies through which aluminum rivets were inserted and fastened with a rivet-all pliers (fig. 3). Two rivets were used on deer collars and three on moose collars. The amount of slack permitted in the collar for expansion was varied with the size and sex of the individual animal.

Armor-tite is available in eight colors: white, red, orange, light blue, yellow, light green, dark blue, and dark green. Various designs can be added to the collar by sewing on vinyl symbols with nylon thread or by applying paints that will adhere to the plastic (fig. 4). Materials cost about 45 cents per collar.

Animals were captured by injecting them with an immobilizing drug (succinylcholine chloride) fired from a Cap-Chur gun. The collar can be applied in less than 10 minutes, although the animals were often immobilized for as long as an hour.

RESULTS

Twenty-five white-tailed deer in Arizona were marked with collars and their movements observed periodically for several months. The habitat consisted mainly of oak-grasslands where it was easy to observe marked deer because of numerous openings. Six of the collars were later recovered on deer killed by hunters. These collars appeared to be in excellent condition after more than 5 months in the field.

[1] *Use of trade names does not imply endorsement of commercial products by the Federal Government to the exclusion of other products that may also be suitable.*

Figure 1. — A collar and ear tags being applied to an immobilized moose on the Agassiz National Wildlife Refuge in Minnesota. (Courtesy U.S. Fish and Wildlife Service.)

Nineteen moose on the Agassiz National Wildlife Refuge were marked with Armor-tite collars during mid-winter. Most of these animals still had their collars after at least 12 months in the field. Collars on moose could easily be seen from aircraft because the vegetation on the refuge consisted mainly of scattered willow clumps with marshes and grasslands interspersed (fig. 5). The marked moose were observed regularly to determine home range and habitat use patterns on the 61,000-acre refuge. More than 200 observations were made of 16 of these animals.

The Armor-tite collars were worn by moose in —35° F. temperatures without any apparent damage. There was little or no color fading of the collars, but designs painted on collars began to wear off after about 6 months. Orange and red colors were often difficult to distinguish at long distances. Several collars on adult male moose were observed to be severely worn after the fall rutting period. Collars on female moose were still in good condition after 1 year's wear.

Figure 2. — A moose with a collar recovering from an immobilizing drug. (Courtesy U.S. Fish and Wildlife Service.)

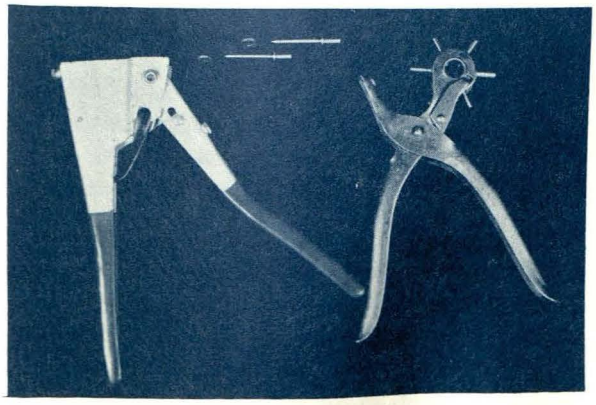

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Figure 3. — The rivet-all pliers with two rivets on the left and the leather punch on the right are the only field tools needed to apply the collar.

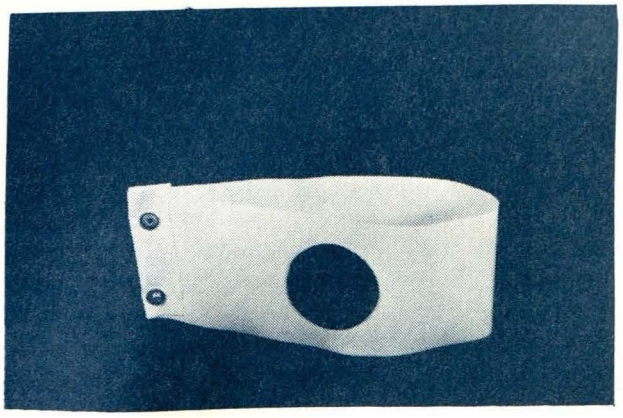

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Figure 4. — Armor-tite deer collar with a black circle on a white background. Note how material was folded back at ends for extra strength and riveted.

Figure 5. — A moose with a collar in a marsh habitat on March 5, 1970. (Courtesy U.S. Fish and Wildlife Service.)

CONCLUSIONS

Armor-tite collars proved to be a useful and inexpensive method for marking deer and moose. The collars stood up well under all weather conditions. The ease of attaching the collar in the field and the overall durability are additional characteristics that make it feasible to try the collar on certain other big game animals.

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